REMARKS

The specification and claim 1 have been amended based on the disclosure of "Aluminum Alloys: Structure and Properties" by L. F. Mondolfo, which is disclosed on page 20 in the present application. "Aluminum Alloys: Structure and Properties" describes that Zr as an unavoidable impurity is present in an amount of 10 - 40 ppm in aluminum with an Al purity of 99.6 - 99.8 wt%. A copy of the relevant pages in "Aluminum Alloys ..." is attached hereto.

Entry of the above amendment is respectfully requested.

Obviousness Rejections

On page 2 of the Office Action, in paragraph 4, claims 1, 3, 5, 7, 8, 10-12 and 14-16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Nishikawa et al (EP 211 574 A1). Also, on page 3 of the Office Action, in paragraph 5, claims 1, 3, 5, 7, 8, 10-12, 14-17 and 19-20 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hotta et al (EP 1 013 429 A1) in view of Nishikawa.

In response, Applicants note initially that Nishikawa at best has 0.01 - 0.15 wt% (100 - 1500 ppm) of Zr (see column 4, line 17).

On the contrary, in the present invention, Zr is not purposely added to aluminum, and the amount of the unavoidable impurity level contained in Al ingots is 10 - 40 ppm of Zr at most.

Accordingly, the 0.01 - 0.15 % (i.e., 100 - 1500 ppm) Zr described in Nishikawa does not teach or suggest the present invention, particularly in view of the disclosure at column 4, lines 5-12 describing that Zr is necessary to form a uniform hydrophilic surface on the support and that

an amount of Zr less than 0.01 wt% does not fully produce this effect, thereby teaching away from using an amount of Zr less than 0.01 wt% and thus teaching away from the present invention.

Seen from this point, Nishikawa and the present invention are significantly different from each other in Al alloy composition.

Also, Applicants note that the Examiner maintains the position that the range of less than 0.05 % Mg of the present invention is obvious in view of the 0.05 to 3 % Mg range taught by Nishikawa.

In response to this point, Applicants wish to emphasize that Mg is an element which significantly affects the mechanical strength of Al and that the range of less than 0.05 % Mg in the present invention is not obvious from the range of 0.05 to 3 % Mg taught by Nishikawa, as discussed below.

As described at column 2, line 30 to column 3, line 15 of Nishikawa, the aluminum conventionally used for the support of a lithographic printing plate is AA1050 (purity 99.5 wt% Al), AA1100 (purity 99.0 wt% Al), or AA3003 (Al - 0.05 to 0.2 wt% Cu - 1.0 to 1.5 wt% Mn alloy), which has a disadvantage that holding parts break if the mechanical strength of a printing plate is low since printing speed has been increasing recently.

Thus, an attempt has been made to use AA6000 (Al-Mg-Si alloy), known as a high strength alloy, as the support for lithographic printing plates. However, such a support has a disadvantage that the surface is not uniformly grained.

In order to solve such a disadvantage of the prior art, Nishikawa carried out extensive studies to find an aluminum alloy for lithographic printing plates which has high mechanical strength, good heat softening resistance, and good water retentive property.

The invention of Nishikawa uses as the support an aluminum plate obtained by hot rolling and cold rolling followed by annealing after a small amount of Zr is added to an Al-Mg-Si to obtain a slab.

In the meantime, since Mg is not purposely added in the present invention, the claims recite Mg of less than 0.05 wt%. Also, Zr is not purposely added. Applicants submit that the alloy compositions set forth in claims of the present application, specifically, Mg of less than 0.05 wt%, would not have been obvious from the range of 0.05 to 3 % Mg taught by Nishikawa. In the present invention, the ingredients are close to AA 1050, which is not obvious over the invention of Nishikawa based on AA6000 (Al-Mg-Si alloy). In this regard, Applicants note that Nishikawa describes that AA 1050 is unsatisfactory in mechanical strength (see columns 1-2).

Applicants note that a Japanese description of the 1050's and 6000's composition based on a JIS standard and an English translation thereof are attached hereto.

Also, Applicants submit herewith a copy of the relevant portion of the reference "The Basic and Industrial Technology of Aluminum Materials" (published by Japan Institute of Light Metals, May 1, 1985 edition), p. 318, and an English translation thereof, which is mentioned in support of the argument that the method allowing Mg and Si to coexist is a method used for JIS 6000 alloy, wherein the heat treatment called solution treatment is performed to improve strength.

The problem that occurs when the composition is as described in Nishikawa except Mg of less than 0.05 wt% is added as in the present invention is unsatisfactory strength. The reason for this is described at column 3, lines 38 to 40 of Nishikawa. In particular, Nishikawa describes that "[w]ith Mg less than 0.05 wt% and Si less than 0.05 wt%, the alloy plate does not have the required strength". Since strength heavily depends on Mg, the material of the composition described in Nishikawa does not have the required strength if Mg of less than 0.05 wt% as in the present invention is used.

On the contrary, the problem when Zr of Nishikawa is added to the composition of the present invention is that it causes unsatisfactory recrystallization and poor surface quality. The reason is as follows. Nishikawa lists some functions of Zr at column 4, lines 5 to 20, and specifically describes in lines 18 to 20 that "[s]ince Zr delays the recrystallization of the alloy, it effectively prevents the plate from becoming dull or distorted by heat". When Zr of the Nishikawa range is added to the material of the present invention, it becomes hard for recrystallization to occur, and when heat treatment is performed by using a continuous annealing furnace as described in the Example, recrystallization is delayed. As a result, a part of the crystalline composition that remains extended in a rolling direction is likely to be left, which causes a poor external appearance after the surface treatment. Accordingly, Applicants submit that the range of the present invention would not have been obvious from the alloy of Nishikawa for the one of ordinary skill in the art.

Additionally, in the heat treatment condition described in the Example of the present application, the product of Mg_2Si as shown in Nishikawa cannot be sufficiently made, and

accordingly, there is no effect and no need to protect the crystallization of Mg_2Si effective in improving strength as shown in Nishikawa from becoming coarse.

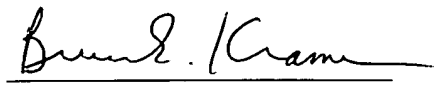
Thus, Applicants submit that the present invention is not obvious from the cited art, and withdrawal of these rejections is respectfully requested.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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